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WHAT IS CLAIMED IS:

- 1           1.     A vehicle comprising:  
2                 a first prime mover;  
3                 a first output shaft;  
4                 a second output shaft; and  
5                 a first planetary gear assembly including:  
6                     a first sun gear;  
7                     a first ring gear; and  
8                     a first plurality of planetary gears supported between  
9     the first ring gear and the first sun gear by a first carrier, wherein one of  
10    the first sun gear and the first ring gear is coupled to the first prime  
11    mover, wherein the other of the first ring gear and the first sun gear is  
12    coupled to the first output shaft and wherein the first carrier is coupled to  
13    the second output shaft.
- 1           2.     The vehicle of Claim 1, wherein the first carrier is selectively  
2     coupled to the second output shaft.
- 1           3.     The vehicle of Claim 2 including a first clutch configured to  
2     selectively couple the first carrier and the second output shaft.
- 1           4.     The vehicle of Claim 1 including a first clutch configured to  
2     selectively couple the first carrier and the first sun gear.
- 1           5.     The vehicle of Claim 1, wherein the first prime mover  
2     includes an electric motor/generator.
- 1           6.     The vehicle of Claim 1, wherein the first prime mover  
2     includes an internal combustion engine.
- 1           7.     The vehicle of Claim 1 including:

2                   a second prime mover;  
3                   a first motor generator; and  
4                   a second planetary gear assembly including:  
5                         a second sun gear;  
6                         a second ring gear; and  
7                         a second plurality of planetary gears between the  
8 second ring gear and the second sun gear and supported by a second  
9 carrier, wherein one of the second sun gear and the second ring gear is  
10 coupled to the second prime mover, wherein the other of the second ring  
11 gear and the second sun gear is coupled to the first motor generator, and  
12 wherein the second carrier is coupled to the second output shaft.

1           8.     The vehicle of Claim 7, wherein the first prime mover  
2 includes an electric motor and wherein the first electric motor/generator  
3 supplies electric power to the first prime mover.

1           9.     The vehicle of Claim 7, wherein the second sun gear is  
2 selectively coupled to the second carrier.

1           10.    The vehicle of Claim 9 including a clutch configured to  
2 selectively couple the second sun gear to the second carrier.

1           11.    The vehicle of Claim 7, wherein the second prime mover  
2 includes an internal combustion engine.

1           12.    The vehicle of Claim 11, wherein the first prime mover  
2 includes a second electric motor.

1           13.    The vehicle of Claim 11, wherein the first prime mover  
2 includes a second electric motor/generator.

1           14.    The vehicle of Claim 1, wherein the first carrier is selectively  
2 coupled to the second output shaft.

1        15.    The vehicle of Claim 14 including a clutch configured to  
2        selectively couple the first carrier to the second output shaft.

1        16.    The vehicle of Claim 1 including a differential having a  
2        differential input coupled to the other of the first ring gear and the first  
3        sun gear, a first differential output coupled to the second output shaft and  
4        a second differential output coupled to the first output shaft.

1        17.    The vehicle of Claim 16 including a clutch configured to  
2        selectively couple the first output shaft and the second output shaft.

1        18.    The vehicle of Claim 1, wherein the first output shaft is  
2        coupled to a first wheel on a first axle and wherein the second output  
3        shaft is coupled to a second wheel on the first axle.

1        19.    The vehicle of Claim 18, wherein the first wheel includes a  
2        first wheel end reduction unit and wherein the second wheel includes a  
3        second wheel end reduction unit.

1        20.    The vehicle of Claim 1, wherein the first output shaft is  
2        coupled to a first wheel on a first axle and wherein the second output  
3        shaft is coupled to a second wheel on a second axle.

1        21.    The vehicle of Claim 20, wherein the first wheel includes a  
2        first wheel end reduction and wherein the second wheel includes a  
3        second wheel end reduction unit.

1        22.    The vehicle of Claim 1 including a generator coupled to the  
2        first prime mover.

1        23.    The vehicle of Claim 1 including a power storage system  
2        coupled to the first prime mover.

1           24.    The vehicle of Claim 1 including a multi-speed transmission  
2   coupled between the first prime mover and the first output shaft.

1           25.    The vehicle of Claim 1 including a central tire inflation  
2   system including:  
3                    an air supply source;  
4                    an air manifold;  
5                    an inflatable tire coupled to the air manifold and disposed on  
6   the wheel; and  
7                    a central tire inflation system control unit configured to  
8   generate a central tire inflation system control signal, wherein the air  
9   manifold regulates the air supply to the wheel in response to the control  
10   signal.

1           26.    The vehicle of Claim 1 including a hybrid drive control unit  
2   configured to generate a hybrid drive control signal based upon torque  
3   and speed requirements of the vehicle.

1           27.    The vehicle of Claim 25 including a hybrid drive control unit  
2   configured to generate a hybrid drive control signal based upon torque  
3   and speed requirements of the vehicle, wherein the central tire inflation  
4   system control unit is configured to regulate tire pressure based at least in  
5   part upon the hybrid drive control signal.

1           28.    The vehicle of Claim 27, wherein the central tire inflation  
2   system control unit is configured to generate a signal to optimize tire  
3   pressure based upon the hybrid drive signal and a user supply input.

1           29.    The vehicle of Claim 26, wherein the hybrid drive control unit  
2   is configured to generate a signal during a turning operation to increase

3 power supplied to a ground motive member located on an outside of a  
4 turning radius of the vehicle.

1 30. The vehicle of Claim 1, wherein the vehicle includes a front  
2 axle and at least one rear axle, wherein the first output shaft transmits  
3 rotation of mechanical energy to the front axle and wherein the second  
4 output shaft transmits rotational mechanical energy to the at least one  
5 rear axle.

1 31. The vehicle of Claim 1, wherein the vehicle includes a front  
2 axle, a first rear axle and a second rear axle, wherein the first output  
3 shaft transmits rotational mechanical energy to the first rear axle and  
4 wherein the second output shaft transmits rotational mechanical energy  
5 to the second rear axle.

1 32. The vehicle of Claim 31 including a second prime mover  
2 coupled to the front axle, wherein the first prime mover supplies rotational  
3 mechanical energy to the front axle.

1 33. The vehicle of Claim 32, wherein the second prime mover  
2 comprises an electric motor.

1 34. The vehicle of Claim 32 including:  
2 a second planetary gear assembly including:  
3 a second sun gear coupled to the second prime mover;  
4 a second ring gear; and  
5 a second plurality of planetary gears supported  
6 between the second ring gear and the second sun gear by a second  
7 carrier, wherein the second carrier is coupled to the front axle; and  
8 a clutch configured to selectively couple the second sun gear  
9 to the second ring gear.

1           35.   The vehicle of Claim 1 including:  
2               a front axle;  
3               a first rear axle; and  
4               a second rear axle, wherein the first output shaft is coupled  
5 to the front axle, wherein the second output shaft is coupled to the first  
6 rear axle and the second axle, wherein approximately 30% of power  
7 generated by the first prime mover is transmitted to the first output shaft  
8 and wherein approximately 70% of the power generated by the first prime  
9 mover is transmitted to the second output shaft.

1           36.   The vehicle of Claim 1 including:  
2               a front axle;  
3               a first rear axle; and  
4               a second rear axle, wherein the first output shaft is coupled  
5 to the front axle, wherein the second output shaft is coupled to the first  
6 rear axle and the second axle, wherein approximately 30% of power  
7 generated by the first prime mover is transmitted to the first output shaft  
8 and wherein approximately 50% of the power generated by the first prime  
9 mover is transmitted to the second output shaft.

1           37.   The vehicle of Claim 1 including:  
2               a front axle; and  
3               a plurality of rear axles, wherein the vehicle operates in a  
4 first mode in which approximately 30% of rotational mechanical energy  
5 provided by the first prime mover is transmitted to the front axle and in  
6 which approximately 70% of the rotational mechanical energy generated  
7 by the first prime mover is transmitted to the plurality of rear axles and a  
8 second mode in which approximately 50% of the rotational mechanical  
9 energy generated by the first prime mover is transmitted to the front axle  
10 and in which approximately 50% of the rotational mechanical energy

11 generated by the first prime mover is transmitted to the plurality of rear  
12 axles.

1           38. The vehicle of Claim 1 including:  
2           a second prime mover;  
3           a first motor generator;  
4           a second planetary gear assembly including:  
5                 a second sun gear;  
6                 a second ring gear; and  
7                 a second plurality of planetary gears between the  
8 second ring gear and the second sun gear and supported by a second  
9 carrier, wherein the carrier is coupled to the second prime mover, wherein  
10 the sun gear is coupled to the first motor/generator; and  
11           a first drive train coupled to the second ring gear, the first  
12 carrier and the second output shaft.

1           39. The vehicle of Claim 38 including:  
2           a drive shaft affixed to the first ring gear;  
3           a third planetary gear assembly including:  
4                 a third sun gear;  
5                 a third ring gear and third plurality of planetary gears  
6 between the third ring gear and the third sun gear and supported by a  
7 third carrier, wherein the third sun gear is affixed to the drive shaft;  
8                 a second drive train coupled to the third carrier and  
9 selectively coupled to the second output shaft; and  
10           a fourth drive train coupled to the third ring gear and  
11 the first output shaft.

1           40. The vehicle of Claim 39 including:  
2           a third prime mover;  
3           a fourth planetary gear assembly including:



4                   a fourth sun gear;  
5                   a fourth ring gear; and  
6                   a fourth plurality of planetary gears between the fourth  
7 ring gear and the fourth sun gear and supported by a fourth carrier,  
8 wherein the fourth sun gear is coupled to the third prime mover, wherein  
9 the fourth ring gear is coupled to the drive shaft;  
10                  a fourth drive train coupled to the fourth carrier and  
11 the first output shaft.

1           41.   The vehicle of Claim 40 including a clutch configured to  
2 selectively couple to the drive shaft against rotation.

1           42.   The vehicle of Claim 41 including a second clutch configured  
2 to selectively couple the second sun gear against rotation.

1           43.   The vehicle of Claim 38 including:  
2                  a drive shaft affixed to the second ring gear;  
3                  a third planetary gear assembly including:  
4                      a third sun gear;  
5                      a third ring gear; and  
6                      a third plurality of planetary gears between the third  
7 ring gear and the third sun gear and supported by a third carrier, wherein  
8 the third sun gear is affixed to the drive shaft;  
9                  a second drive train coupled to the third ring gear and to the  
10 first output shaft.

1           44.   The vehicle of Claim 43 including:  
2                  a third prime mover;  
3                  a fourth planetary gear assembly including:  
4                      a fourth sun gear;  
5                      a fourth ring gear; and

6                   a fourth plurality of planetary gears between the fourth  
7 sun gear and the fourth ring gear and supported by a fourth carrier,  
8 wherein the fourth sun gear is coupled to the third prime mover and  
9 wherein the fourth ring gear is affixed to the drive shaft; and  
10                   a third drive train coupled to the fourth carrier and the first  
11 output shaft.

1           45. The vehicle of Claim 44 including a clutch configured to  
2 selectively couple the drive shaft against rotation.

1           46. The vehicle of Claim 45 including a second clutch configured  
2 to selectively couple the second sun gear against rotation.

1           47. The vehicle of Claim 38 including a clutch configured to  
2 selectively couple the first output shaft to the second output shaft.

1           48. The vehicle of Claim 1 including:  
2                   a second prime mover;  
3                   a third output shaft;  
4                   a second planetary gear assembly including:  
5                         a second sun gear;  
6                         a second ring gear; and  
7                         a second plurality of planetary gears supported  
8 between the second ring gear and the second sun gear by a second  
9 carrier, wherein the second sun gear is coupled to the second prime  
10 mover and wherein the second carrier is coupled to the third output shaft;  
11 and  
12                   a clutch configured to move between a first position in which  
13 the clutch secures the second ring gear against rotation and a second  
14 position in which the clutch couples the second ring gear to the second  
15 sun gear.

1           49.   The vehicle of Claim 48, wherein the vehicle includes:  
2               a front axle;  
3               a first rear axle; and  
4               a second rear axle, wherein the first output shaft is coupled  
5 to the first rear axle, wherein the second output shaft is coupled to the  
6 second rear axle and wherein the third output shaft is coupled to the front  
7 axle.

1           50.   The vehicle of Claim 1 including:  
2               a second prime mover;  
3               a first motor/generator;  
4               a second planetary gear assembly including:  
5                   a second sun gear;  
6                   a second ring gear; and  
7                   a second plurality of planetary gears supported  
8 between the second ring gear and the second sun gear by a second  
9 carrier, wherein the second sun gear is coupled to the first  
10 motor/generator;  
11              a first drive train coupled to the second prime mover and the  
12 second ring gear; and  
13              a second drive train selectively coupled between the second  
14 carrier and the first ring gear, wherein the second carrier is coupled to the  
15 first output shaft.

1           51.   The vehicle of Claim 50 including a third drive train  
2 selectively coupled between the second carrier and the first ring gear,  
3 wherein the first drive train has a first speed reduction and wherein the  
4 second drive train has a second different speed reduction.

1           52. The vehicle of Claim 51, wherein the third drive train is  
2 selectively coupled to the second prime mover.

1           53. The vehicle of Claim 50 including a drive train selectively  
2 coupling the first output shaft to the second output shaft.

1           54. The vehicle of Claim 1 including:  
2               a second prime mover;  
3               a drive shaft coupled to the second prime mover;  
4               a motor/generator;  
5               a second planetary gear assembly including:  
6                     a second sun gear;  
7                     a second ring gear;  
8                     a second plurality of planetary gears supported  
9 between the second ring gear and the second sun gear by a second  
10 carrier, wherein the second sun gear is coupled to the motor/generator;  
11 and  
12               a drive train coupled between the first drive shaft and  
13 the second ring gear;  
14               a second drive shaft;  
15               a second drive train coupled between the second carrier and  
16 the second drive shaft, wherein the second carrier is coupled to the  
17 output shaft;  
18               a third planetary gear assembly including a third sun gear;  
19               a third ring gear; and  
20               a third plurality of planetary gears supported between the  
21 third ring gear and the third sun gear by a third carrier, wherein the third  
22 ring gear is affixed to the second drive shaft;  
23               a third drive train coupled between the third sun gear and the  
24 first ring gear; and

25                   a first clutch configured to selectively couple the third carrier  
26   to the third drive train.

1           55.   The vehicle of Claim 54 including a second clutch configured  
2   to selectively couple the third carrier against rotation.

1           56.   The vehicle of Claim 55 including a third clutch configured to  
2   selectively couple the first drive shaft directly to the second drive shaft.

1           57.   The vehicle of Claim 56 including a fourth drive train  
2   selectively coupled between the second drive shaft and the first output  
3   shaft.

1           58.   The vehicle of Claim 54, wherein at least one of the first ring  
2   gear and the second ring gear is configured to be selectively coupled  
3   against rotation.

1           59.   A drive system comprising:  
2                   a first prime mover;  
3                   a first output shaft;  
4                   a second output shaft; and  
5                   a first planetary gear assembly including:  
6                           a first sun gear;  
7                           a first ring gear; and  
8                           a first plurality of planetary gears supported between  
9   the first ring gear and the first sun gear by a first carrier, wherein one of  
10   the first sun gear and the first ring gear is coupled to the first prime  
11   mover, wherein the other of the first ring gear and the first sun gear is  
12   coupled to the first output shaft and wherein the first carrier is coupled to  
13   the second output shaft.

1           60. The drive system of Claim 59, wherein the first carrier is  
2 selectively coupled to the second output shaft.

1           61. The drive system of Claim 60 including a first clutch  
2 configured to selectively couple the first carrier and the second output  
3 shaft.

1           62. The drive system of Claim 59 including a first clutch  
2 configured to selectively couple the first carrier and the first sun gear.

1           63. The drive system of Claim 59, wherein the first prime mover  
2 includes an electric motor/generator.

1           64. The drive system of Claim 59, wherein the first prime mover  
2 includes an internal combustion engine.

1           65. The drive system of Claim 59 including:  
2               a second prime mover;  
3               a first motor generator; and  
4               a second planetary gear assembly including:  
5                     a second sun gear;  
6                     a second ring gear; and  
7                     a second plurality of planetary gears between the  
8 second ring gear and the second sun gear and supported by a second  
9 carrier, wherein one of the second sun gear and the second ring gear is  
10 coupled to the second prime mover, wherein the other of the second ring  
11 gear and the second sun gear is coupled to the first motor generator, and  
12 wherein the second carrier is coupled to the second output shaft.

1           66. The drive system of Claim 65, wherein the first prime mover  
2 includes an electric motor and wherein the first electric motor/generator  
3 supplies electric power to the first prime mover.

1           67. The drive system of Claim 65, wherein the second sun gear  
2 is selectively coupled to the second carrier.

1           68. The drive system of Claim 67 including a clutch configured  
2 to selectively couple the second sun gear to the second carrier.

1           69. The drive system of Claim 65, wherein the second prime  
2 mover includes an internal combustion engine.

1           70. The drive system of Claim 69, wherein the first prime mover  
2 includes a second electric motor/generator.

1           71. The drive system of Claim 59, wherein the first carrier is  
2 selectively coupled to the second output shaft.

1           72. The drive system of Claim 59 including a differential having a  
2 differential input coupled to the other of the first ring gear and the first  
3 sun gear, a first differential output coupled to the second output shaft and  
4 a second differential output coupled to the first output shaft.

1           73. The drive system of Claim 72 including a clutch configured  
2 to selectively couple the first output shaft and the second output shaft.

1           74. A vehicle comprising:  
2 an internal combustion engine;  
3 a first motor/generator;  
4 a second motor/generator;  
5 at least one first axle;  
6 a first output shaft coupled to the at least one first axle;  
7 at least one second axle;  
8 a second output shaft coupled to the at least one second  
9 axle;

10                   a first planetary gear assembly including:  
11                   a first sun gear;  
12                   a first ring gear; and  
13                   a first plurality of planetary gears supported between  
14 the first ring gear and the first sun gear by a first carrier, wherein the first  
15 sun gear is coupled to the first motor/generator, wherein one of the first  
16 carrier and the first ring gear is coupled to the engine;  
17                   a drive train coupled between the second output shaft and  
18 the other of the first carrier and the first ring gear;  
19                   a second planetary gear assembly including:  
20                   a second sun gear;  
21                   a second ring gear; and  
22                   a second plurality of planetary gears supported  
23 between the second ring gear and the second sun gear by a second  
24 carrier, wherein one of the second ring gear and the second sun gear is  
25 coupled to the second motor/generator, wherein the other of the second  
26 ring gear and the second sun gear is coupled to the first output shaft and  
27 wherein the second carrier is coupled to the second output shaft.

1           75. The vehicle of Claim 74, wherein the second carrier is  
2 configured to be selectively coupled to the second output shaft and  
3 wherein the second carrier is configured to be selectively coupled to the  
4 second sun gear.

1           76. The vehicle of Claim 75, wherein the first carrier is  
2 configured to be selectively coupled to the first sun gear.

1           77. The vehicle of Claim 74 including:  
2                   a differential coupled between the first output shaft and the  
3 second output shaft; and



4                   a drive train coupled between the second ring gear and the  
5 differential.